Original Research Article

Prescribing trends in respiratory tract infections in a tertiary care teaching hospital

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ABSTRACT

Background: Respiratory tract infections are a major cause of morbidity and mortality in developing countries. Polypharmacy and irrational prescribing in respiratory diseases are common practice worldwide. Keeping in consideration this scenario, present study was undertaken to analyze the drug utilization pattern of respiratory tract infections.
Methods: This drug utilization study was conducted by Pharmacology department at SGRRIM & HS to analyze drug utilization pattern of respiratory infections. A total of 585 prescriptions were collected from hospital and randomly evaluated for prescribing pattern using WHO drug indicators.
Results: A total of 585 prescriptions were analyzed. Male:Female ratio was 1:0.77. Age wise distribution was done; 81(13.84%) 0-15 years, 54(9.23%) 16-30 years, 198(33.84%) 31-45 years, 75(12.82%) 46-60 years and 177(30.25%) patients belongs to >60 years of age group respectively. A total of 4869 drugs were prescribed, 2754(56.56%) antibiotics, 675(13.8%) bronchodilators, 630(12.93%) corticosteroids, 303(6.22%) antacids, 507(10.41%) in miscellaneous category respectively. 2562(52.61%) oral, 1491(30.62%) injectable and 816(16.75%) inhalational drugs were prescribed. Numbers of Fixed dose combinations were 645(13.24%). 8.32 drugs were prescribed per prescription. 2409(49.47%) drugs were prescribed from national essential medicine list 2015. 4320(88.72%) drugs were prescribed by their brand names.
Conclusions: Irrational prescribing and polypharmacy was observed. The drug utilization studies are important tool to sensitize and increases awareness among physicians, which ultimately improves rational prescribing and patient care.

Keywords: Drug utilization, Rational prescribing, Respiratory infections

INTRODUCTION

A respiratory tract infection (RTI) is defined as any infectious disease of the upper and lower respiratory tract.[1] Infectious diseases remain a significant threat to public health, posing risks to individuals regardless of age, sex, ethnic background, socioeconomic status, or lifestyle.[2] In India, acute respiratory tract infections (ARTI) are responsible for one million deaths. Out of these 10-15% is due to acute lower respiratory tract infections (ALRTIs).

There is inadequate information from India on various lower respiratory tract bacterial pathogens and their resistance patterns in hospital settings.[3] The RTIs includes Upper respiratory tract infection (URTI), it is a

nonspecific term used to describe acute infections such as common cold pharyngitis, sinusitis, and tracheobronchitis.

Lower respiratory tract infections (LRTIs) are frequent and include community acquired pneumonia, exacerbations of chronic bronchitis, acute bronchitis, and viral lower respiratory tract infections.[1-3]

Inappropriate use of antibiotics, particularly for RTIs, has contributed to the major public health problem of antibiotic resistance in the community. Improper antibiotic use includes too low dose, too short/long duration, wrong choice of antibiotics, improper combination of antibiotics and therapeutic or prophylactic use in unwarranted/unproven clinical situations.

An audit of prescribing patterns is an important indicator of the quality and standard of clinical practice. The study of prescribing patterns is a part of medical audit and seeks to monitor, evaluate and if necessary, suggest modifications in prescribing practices to make medical care rational.[4] Antibiotics are being prescribed for either prophylactic or therapeutic reasons. Irrational prescription of antibiotics might lead to drug resistance. By considering the above facts this study entitled prescribing trends in respiratory tract infections used as a tool to assess the rational prescribing pattern at tertiary care teaching hospital.

METHODS

This drug utilization study was conducted by Pharmacology department in Shri Guru Ram Rai Institute of Medical and Health Sciences to analyze drug utilization pattern in respiratory infections, after taking permission from the institutional ethics committee.

A total of 585 prescriptions of diagnosed respiratory tract infection cases were collected from hospital and randomly evaluated for prescribing pattern using WHO drug indicators. These indicators including number of drugs per prescription, drugs prescribed by brand names, fixed dose combinations, drugs from essential medicine list and drug formulations.
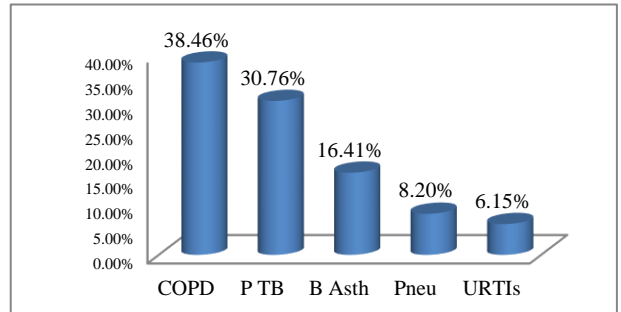
RESULTS

A total of 585 prescriptions were collected from the hospital. 330 (56.41%) patients were male and 255 (43.59%) were female, male: female ratio was 1:0.252 (43.08%)patients were >45 years, the most commonly affected age group of patients (Table 1).

The respiratory tract infections prevalence, 225 (38.46%) patients were diagnosed as chronic obstructive pulmonary disease (COPD),180 (30.76%) pulmonary tuberculosis, 96 (16.41%) bronchial asthma, 48 (8.20%) pneumonia and 36 (6.15%) of upper respiratory tract infection (URTI) respectively (Figure 1).
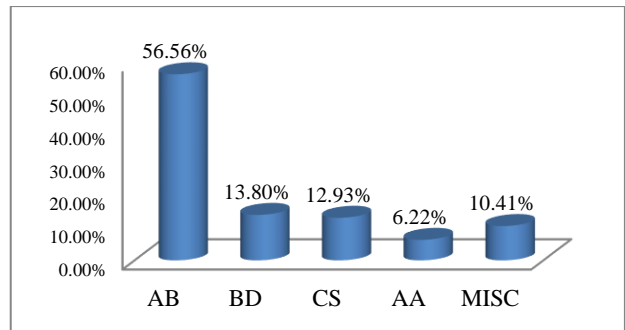
Table 1: Demographic profile.

Parameters		Number (%)
Male: female		330:255 (56.41%:43.58%)
Age (Years)	0-15	81(13.84%)
	15-30	54(9.23%)
	31-45	198(33.84%)
	46-60	75(12.82%)
	>60	177(30.25%)

COPD: Chronic obstructive pulmonary disease, PTB: Pulmonary tuberculosis, B Asth: Bronchial Asthma, Pneu: Pneumonia\

Figure 1: Diseases prevalence in RTIs.

AB: Antibiotics, BD: Bronchodilators, CS: Corticosteroids, AA: Antacids, Misc: Miscellaneous.
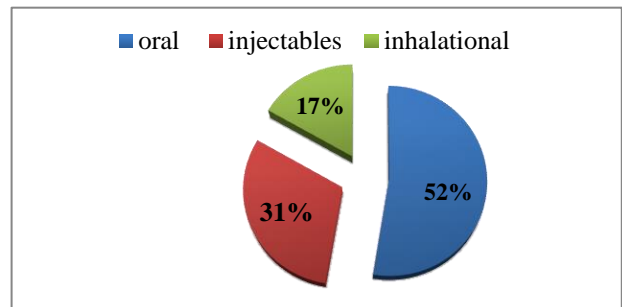
Figure 2: Drugs prescribed commonly.

Figure 3: Different drug formulations.

Out of 4869 prescribed drugs, 2754 (56.56%) antibiotics, 675 (13.80%) bronchodilators, 630 (12.93%) corticosteroids, 303 (6.22%) antacids and 507 (10.41%) from the miscellaneous category (Figure 2). The most commonly prescribed corticosteroid was prednisolone 567(90.0%), and antibiotics were Levofloxacin 507 (18.40%), Piperacillin plus tazobactam 435(15.80%),

Amoxicillin plus clavulanic acid 306 (11.11%) and Ofloxacin 294 (10.67%) respectively (Table 2).

Drug formulations prescribed, 2562 (52.61%) oral, 1491 (30.62%) injectable and 816 (16.75%) inhalational (Figure 3). 645 (13.24%) fixed dose combination was prescribed, 8.32 drugs were prescribed per prescription, 2409 (49.47%) drugs were from the national essential list of medicines 2015 and 4320 (88.72%) drugs were prescribed by brand names (Table 3).

Table 2: Most frequently prescribed drugs.

Drugs	Number (%)
Prednisolone	567 (90.0%)
Levofloxacin	507 (18.40%)
Piperacillin + tazobactam	435 (15.80%)
Amoxicillin + clavulanic acid	306 (11.11%)
Ofloxacin	294 (10.67%)

Table 3: Other drug utilization parameter analysed.

Other parameters	Number (%)
Fixed dose combinations	645 (13.24%)
Drugs per prescription	8.32%
Drugs from National Essential Medicine List (NEML) 2015	2409 (49.47%)
Drugs prescribed by brand names	4320 (88.72%)

DISCUSSION

In recent years, the studies on drug utilization have become a potential tool to be used in the evaluation of health care systems. Drug utilization studies used to analyze the different aspects of the use of drugs and to implement ways of improving therapeutic quality. A total of 585 patients of respiratory tract infections (RTIs) were included in the study, 56.41% were males, which is similar to the study by Erabelly P et al where 51.11% of the patients were males.[5]

In present study the most common diseases were chronic obstructive pulmonary disease (COPD), Pulmonary tuberculosis, Bronchial asthma, Pneumonia and upper respiratory tract infections (URTIs), which is similar to the previous studies.[5,6] The most commonly affected patients were belongs to >45 years of age group, which is in relation with the earlier study by Mahajan HM et al.[6] The antibiotics were most commonly prescribed drugs which is in accordance to other previous studies.[5-8] In the present study, the most commonly prescribed antibiotics was levofloxacin, in study by Pandit PR et al amoxicillin, whereas in study by Errabelly P et al cephalosporins was the most commonly prescribed antibiotic.[5,8] The most commonly prescribed fixed dose combination (FDC) in present study was Piperacillin+ Tazobactam, which is in contrast to the study by Mahajan et al, where the most common FDC was Amoxicillin+ clavulanic acid.[6] In present study 52.61% oral, 30.62% injectable and 16.75%

inhalational drugs were prescribed, while in another study 86% drugs were prescribed by oral and 14% by nasal route.[9]

Number of drugs per prescription was 8.32 which is in contrast to the study by Gogoi S et al where average number of drugs per prescription was 6.92.[7] In the present study 49.47% drugs from national essential list of medicines 2015 were prescribed, while in previous study 66.7% drugs were prescribed from NLEM.[6] In the present study the 88.72% drugs were prescribed by brand name, which is in accordance with the study by Mungrue K et al, where all the drugs were prescribed by brand names.[10] Prescribing by brand names may be an evidence of vigorous promotional strategies by pharmaceutical industries.

Prescribing drugs by brand names may undermine some of the goals of essential medicine concept. Prescribing by generic name helps the hospital pharmacy to have a better inventory control. This will also help the pharmacy to purchase drugs on contract basis, as the number of brands is less, thus reducing the confusion among pharmacists while dispensing. Generic drugs are often more economical than the branded ones. Regarding the prescribing of FDCs, Potential advantages of FDC's include reduced side effects, increased patient compliance, synergy and increased efficacy and reduced cost, potential disadvantages include inflexible fixed dose ratio, incompatible pharmacokinetics, increased toxicity, physician and pharmacist's ignorance.[11]

At the study site the prescribers are not having any standard antibiotic prescribing guidelines for RTIs nor are they following any standard guidelines available. Hence there is a need of educational programmes in order to bring rational use of antibiotics that requires development of standard guidelines for antibiotic prescription.

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